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Tending Your Inner Ecosystem

How to boost the friendly bacteria in your gut

By [Tamara Duker Freuman](#) | Sept. 5, 2012 | 3:10 p.m. EDT

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Most people give little thought to the teeming, diverse, and industrious community of bacteria that reside in their intestines. But each of us hosts an entire ecosystem of microscopic organisms—often referred to as "microflora," or "gut flora"—whose existence has evolved with humankind for millennia. To give you a sense of just how large and diverse this population is, consider these fun flora facts: our colons are home to bacteria from at least 400 different species (and possibly many more), with each gram of content hosting up to one trillion individual bacteria. Not surprisingly, two-thirds of our stool is actually comprised of dead bacteria! And how's this for mind-blowing: You carry around more bacterial DNA than your own human DNA.



Tamara Duker Freuman

The more squeamish among us may prefer to ignore their unwitting role as landlord to this invisible community. But do so at your own risk! These friendly bacteria have important roles in metabolizing our food, producing vitamins, and protecting us from infectious overgrowth of harmful yeast and disease-causing bacteria. Beyond these established roles, there is a growing body of research investigating associations between the health of one's gut flora and the health of one's body.

Although the implications of this emerging research remain controversial, it has been noted that people with normal digestive function tend to have a different profile of gut flora than people with [Irritable Bowel Syndrome \(IBS\)](#), and obese people may have gut flora skewed toward different classes of bacteria than those at a normal weight. It has also been observed that infants given antibiotics in their first six months of life have a greater risk of obesity later in childhood, and those given antibiotics in their first year may have an increased risk of asthma. While these associations most certainly do not imply causation, there does seem to be growing consensus in the research community that our gut flora play a role in health that is far wider-reaching than once presumed.

The National Institutes of Health (NIH) has sponsored an ambitious research program, called the Human Microbiome Project, to sequence the bacteria (and their genes) that reside in healthy people in an effort to learn more about their contribution to human health. This research has already identified the first strain of friendly bacteria that directly influences human immune cells, and I suspect we can look forward to many more fascinating discoveries to come.

In many ways, your gut flora is like a fingerprint: it is unique to you, and the result of a variety of influences—from the method of your birth and whether you were breastfed or formula fed to your antibiotic use throughout life, the fiber content of your diet, your intake of cultured and fermented foods, and your exposure to soil, animals, siblings and other environmental carriers of bacteria. The majority of this fingerprint, furthermore, appears to be fashioned in early childhood, though it can certainly be influenced in adulthood as well.

If you're convinced that paying more attention to those trillions of inner voices may be of more benefit than you had once assumed, here are some ways to be more hospitable.

- **If you're an expectant mom, consider a vaginal birth and some breastfeeding if you are able to do so.** While C-sections are a medical necessity for some, the high rate of elective C-sections in this country may be one factor that limits transmission of beneficial bacteria from generation to generation.

Going through the birth canal is more than just a symbolic "rite of passage"; it's a baby's first exposure to the bacteria that will start to populate his sterile gut. Similarly, research suggests that breastfed babies tend to have gut flora whose populations contain more beneficial strains of bacteria (such as bifidobacteria) and fewer potentially disease-causing ones (such as *E. coli* and *C. difficile*) when compared to formula-fed babies, particularly before solid foods are introduced. The method of delivery and infant feeding practices represent two important opportunities to promote exposure to a diverse array of beneficial bacteria in early childhood.

- **Toss the hand sanitizer and let your kids get dirty.** To some, the sight of my unsheathed/unwiped grocery cart, my kids eating a dropped Cheerio off the playground, or the dirt underneath their fingernails make me seem like a negligent mom. However, I make it a point to allow my children regular exposure to environmental bacteria rather than chasing them down with antibacterial wipes and hand sanitizers. Digging in the dirt, making mud pies, petting dogs, visiting farms and petting zoos, and going berry picking are important ways that urban kids can maintain healthy contact with the microbial world. Washing hands with soap and water once playtime is over and before a meal is more than sufficient to prevent the unlikely event of infection.

- **Eat plant-based foods rich in a variety of different fibers.** Fiber feeds intestinal bacteria, and different bacteria favor feeding on different fibers. The variety of dietary fibers naturally found in whole, minimally-processed foods include pectins in fruit; oligosaccharides in root veggies and beans; celluloses in seeds and cruciferous vegetables; and hemicelluloses in bran. Eat a diverse array of these foods yourself, and feed them to your babies, toddlers, and children in texture-appropriate forms.

- **Include "probiotic" rich foods in your diet, like cultured dairy and fermented vegetables.** Cultured dairy foods like yogurt and kefir; fermented beverages like kombucha and kvass; and fermented foods like sauerkraut, kimchi, and sourdough bread all have something in common: they're natural sources of bacteria—some of which are considered "probiotics." Probiotics are bacteria that have demonstrated health benefits in humans. [If yogurt is your probiotic-rich food of choice](#), be sure to buy brands that contain "live and active" cultures (some brands are heat-treated after culturing, which kills all the beneficial bacteria), and look for brands that list a variety of different bacterial cultures on the label; diversity is key!

- **Be judicious about antibiotic use.** Rather than beg for antibiotics at the first sign of a cold, [treat antibiotics as a last resort](#), reserved for occasions of true medical need as determined by your doctor. If you are to start an antibiotic course, ask your doctor whether a narrow-spectrum antibiotic might be as effective as a broad-spectrum one for your particular type of infection; if so, you may be able to limit the collateral damage done to beneficial gut flora. Also, consider supplementing your antibiotic with a supportive, supplemental probiotic regimen that is spaced appropriately from the antibiotic dose. Your doctor or dietitian can help recommend one.

Hungry for more? Write to eatandrun@usnews.com with your questions, concerns, and feedback.

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